

**REMARKS/ARGUMENTS****Status of the Application**

Prior to the entry of this amendment, there were 22 claims in this application. In the present amendment, claim 1 is being amended and three claims are being cancelled. No new matter is added by the amendments. Claim 1 has been amended by including the elements of claims 3 and 22 in order to clarify the difference between the currently claimed invention and the prior art, no new matter has been added by this clarification. The term “acoustic signals” has been replaced by “seismic signals” in claim 1 and other dependent claims; applicant submits that no new matter is added by this clarifying amendment. Claims 3, 20 and 22 have been cancelled.

All claims stood rejected under 35 USC 101. The amendments to claim 1 amplify the purpose of the claimed method using language from claims 20 and 22. The claims also refer to *a plurality of receivers*. Applicants respectfully request reconsideration of this application as amended.

**35 U.S.C. §101 Rejections**

In the Office Action all claims were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. In making the rejection reliance was placed on the *In re Bilski* decision in the Federal Court, which imposed a “machine or transformation” test.

As has been widely publicised, the subsequent appeal to the Supreme Court has now been decided. The decision of the Supreme Court confirmed the Federal Court’s rejection of the actual claims in front of them but rejected the “machine or transformation” test.

The Supreme Court supported earlier decisions such as *Diamond v Diehr* which denied the patentability of an algorithm as such. It is notable that the patent application which was the

subject of *Diamond v Diehr* did proceed to issue with method claims, as US patent 4344142. The various decisions generally emphasise that the range of patentable subject matter is wide and that exceptions to what is patentable should be defined narrowly.

The amendment now made to claim 1 seeks to emphasise that claim 1 meets the requirement for a “useful, concrete and tangible result” mentioned at MPEP 2106. In this present case the result is to determine properties of multiple layers of earth. The value of such knowledge is that knowing the properties of multiple layers of earth is a way of monitoring what is taking place in a subterranean reservoir.

Applicants also respectfully submit that the claims refer to *a plurality of receivers*.

It is respectfully submitted that

- the machine or transformation test is no longer good law;
- claim 1 now refers to a method step performed with hardware as well as utilisation and processing of information collected by that hardware. Consequently the claim does not contravene the prohibition on claiming an algorithm as such.
- the method leads to a useful result which is information about properties of multiple layers of earth.

It is respectfully requested that the rejection under 35 U.S.C. §101 is withdrawn.

**35 U.S.C. §102(b) Rejections**

In the Office Action all claims were rejected under 35 U.S.C. §102(b) as being anticipated by Thompsen (6,128,580).

The present invention provides a method to enable a significant change in the way seismic data could be evaluated. The invention expands the use of receiver function to determine

the properties of a layered earth beneath the receiver. By enabling a multi-layer evaluation, receiver functions can now be used in a way which put them on par with conventional seismic reflection data. Whereas the former were known to provide data for a single surface layer or homogeneous medium below the receiver and the latter were used to determine the properties of a layered earth, it is a contribution of the present invention to remove this distinction. Applying the present invention, receiver functions can be used to determine parameters of a layered earth.

Thompsen does not provide these features.

To emphasize this distinction and the above contribution of the invention, claim 1 has been amended by including the elements of claims 3 and 22 (both now cancelled).

It is respectfully requested that the rejection under 35 U.S.C. §102 is withdrawn.

**CONCLUSION**

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

In the event that a fee or refund is due in connection with this Amendment, the Commissioner is hereby authorized to charge any underpayment or credit any overpayment to Deposit Account No 19-0615. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned.

Respectfully submitted,

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